

a first positioning device mounted on the table, the first positioning device positioning the workpiece in a first direction; and

a second positioning device mounted on the table, the second positioning device positioning the workpiece in the first direction; and

a working head mounted in the body frame so as to position in a second direction perpendicular to the first direction to punch the workpiece,

wherein the first positioning device and the second positioning device are arranged in series in the first direction;

wherein the first positioning device includes a first clamp to clamp a first margin of the workpiece in the first direction and a second clamp to clamp a second margin opposite to the first margin of the workpiece; and

wherein the first clamp can be moved to approach to the second clamp in the second direction.--

11
--37/. The punching machine according to claim 10, wherein the first positioning device and the second positioning device are constructed in a manner such that the first positioning device and the second positioning device may alternately position the workpiece in the first direction.--

12
--38. The punching machine according to claim 37, wherein the workpiece is sheet shaped material uncoiled from a coiled material.--

¹³
~~36~~. The punching machine according to claim ¹⁰~~36~~, wherein
the first positioning device is located at one side of the working head on the table; and
the second positioning device is located at the other side of the working head on the
table.--

¹⁴
~~40~~. The punching machine according to claim ¹⁰~~36~~, further comprising a clutch
connecting the first positioning device to the second positioning device so that the first and the
second positioning devices transfer the workpiece in the first direction simultaneously.--

¹⁵
~~41~~. The punching machine according to claim ¹⁰~~36~~, wherein the first positioning device
has a plurality of clamps which clamp both margins parallel to the first direction of the
workpiece.--

¹⁶
~~42~~. The punching machine according to claim ¹⁵~~41~~, wherein the second positioning
device has a plurality of clamps which clamp both margins parallel to the first direction of the
workpiece.--

¹⁷
~~43~~. A punching machine, comprising:
a body frame having a table supporting a workpiece to be worked;
a first positioning device mounted on the table positioning the workpiece in a first
direction;

a second positioning device mounted on the table positioning the workpiece in the first direction; and

a working head mounted in the body frame so as to position in a second direction perpendicular to the first direction to punch the workpiece,

wherein the working head comprises:

an upper tool holder holding a plurality of upper tools;

a lower tool holder holding a plurality of lower tools;

a ram actuating the upper tools and the lower tools to work the workpiece; and

a ram positioning mechanism shifting the ram in the first and second directions so as to be positioned at a location where the ram may actuate a predetermined upper tool and a lower tool cooperating with the predetermined upper tool to work the workpiece,

wherein the first positioning device includes a first clamp to clamp a first margin of the workpiece in the first direction and a second clamp to clamp a second margin opposite to the first margin of the workpiece; and

wherein the first clamp can be moved to approach to the second clamp in the second direction.--

¹⁸
--44. The punching machine according to claim ¹⁷~~43~~, wherein
the first positioning device and the second positioning device are arranged in series in the first direction.--

¹⁹
~~45~~. The punching machine according to claim ¹⁸~~44~~, wherein the working head further comprises a C-shaped frame connecting the upper tool holder and the lower tool holder.--

²⁰
~~46~~. The punching machine according to claim ¹⁹~~45~~, further comprising a plate holding clamp mounted on the body frame to hold down the workpiece against the table.--

²¹
~~47~~. A method of punching, comprising the steps of:

clamping a first margin of a workpiece in a first direction by a first clamp of a first positioning device;

moving a second clamp toward the first clamp of the first positioning device;

clamping a second margin opposite to the first margin of the workpiece with the second clamp;

transferring the workpiece in the first direction with the first positioning device;

positioning a working head in a second direction perpendicular to the first direction;

punching the workpiece with the working head;

clamping the workpiece with a second positioning device;

unclamping the workpiece from the first positioning device; and

further transferring the workpiece in the first direction with the second positioning device,

wherein the first positioning device and the second positioning device clamp the same margin of the workpiece in a manner such that the first positioning device and the second positioning device are arranged in series in the first direction.--

²²
~~48~~. The method of punching according to claim ²¹~~47~~, wherein the workpiece is sheet shaped material uncoiled from a coiled material.--

²³
~~49~~. The method of punching according to claim ²²~~48~~, further comprising transferring the workpiece in the first direction with the first and the second positioning devices simultaneously.--

²⁴
~~50~~. The method of punching according to claim ²³~~49~~, wherein the workpiece is clamped through a plurality of clamps mounted on the first positioning device which clamp both margins parallel to the first direction of the workpiece.--

²⁵
~~51~~. The method of punching according to claim ²⁴~~50~~, wherein the workpiece is clamped through a plurality of clamps mounted on the second positioning device which clamp both margins parallel to the first direction of the workpiece.--

²⁶
~~52~~. The method of punching according to claim ²¹~~47~~, further comprising shifting a ram mounted in the working head in the first and second directions so as to select a predetermined upper tool and lower tool to cooperate with each other to work the workpiece.--

²⁷
~~53~~. The method of punching according to claim ²⁶
~~52~~, further comprising:

transferring reversely the workpiece in a first direction by the first positioning device; and
forming the workpiece with the selected upper and lower tools.--

²⁸
~~54~~. A punching machine, comprising:

a body frame having a table, the table supporting a workpiece to be worked;

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a first positioning device mounted on the table, the first positioning device positioning the
workpiece in a first direction; and

a working head mounted in the body frame so as to be positioned in a second direction
perpendicular to the first direction to punch the workpiece,

wherein the workpiece is sheet shaped material uncoiled from a coiled material;

wherein the first positioning device includes a first clamp to clamp a first margin of the
workpiece in the first direction and a second clamp to clamp a second margin opposite to the first
margin of the workpiece; and

wherein the first clamp can be moved to approach to the second clamp in the second
direction.--

²⁹
~~55~~. The punching machine according to claim ²⁸
~~54~~, further comprising a second
positioning device mounted on the table, the second positioning device positioning the workpiece
in the first direction.--